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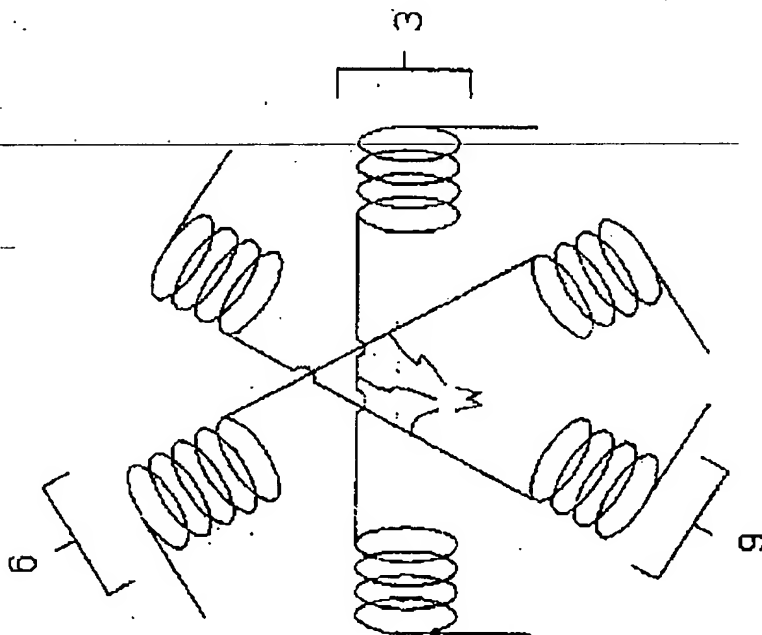


FIG 1
PRIOR ART

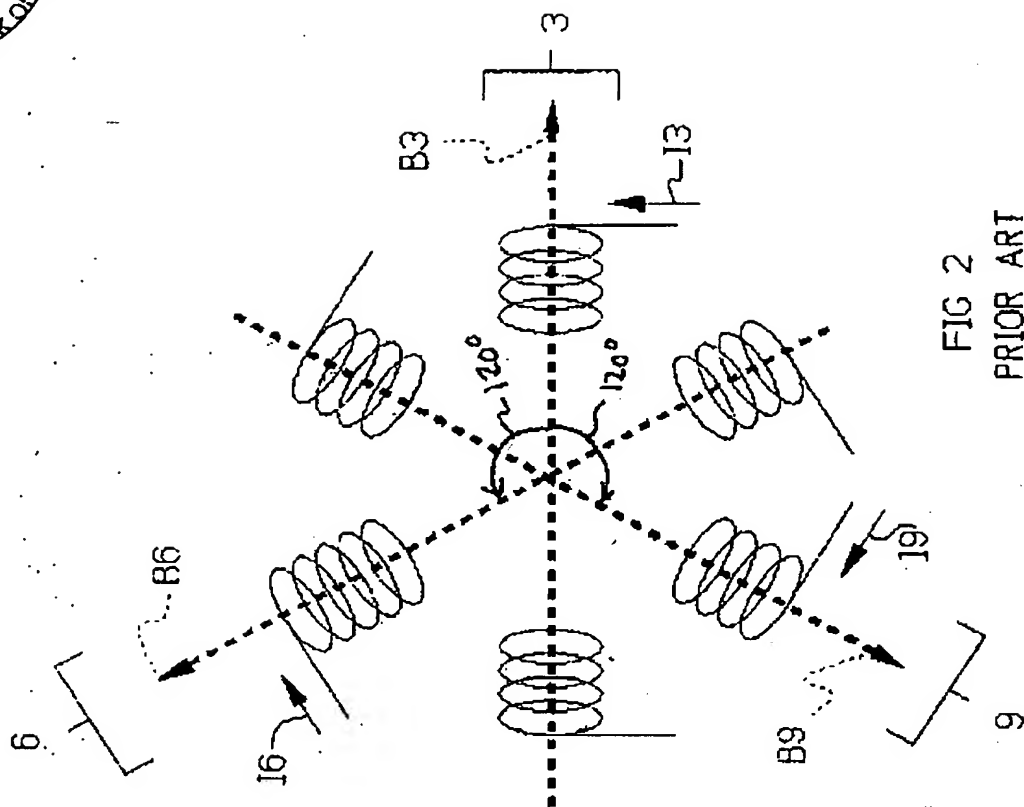


FIG 2
PRIOR ART

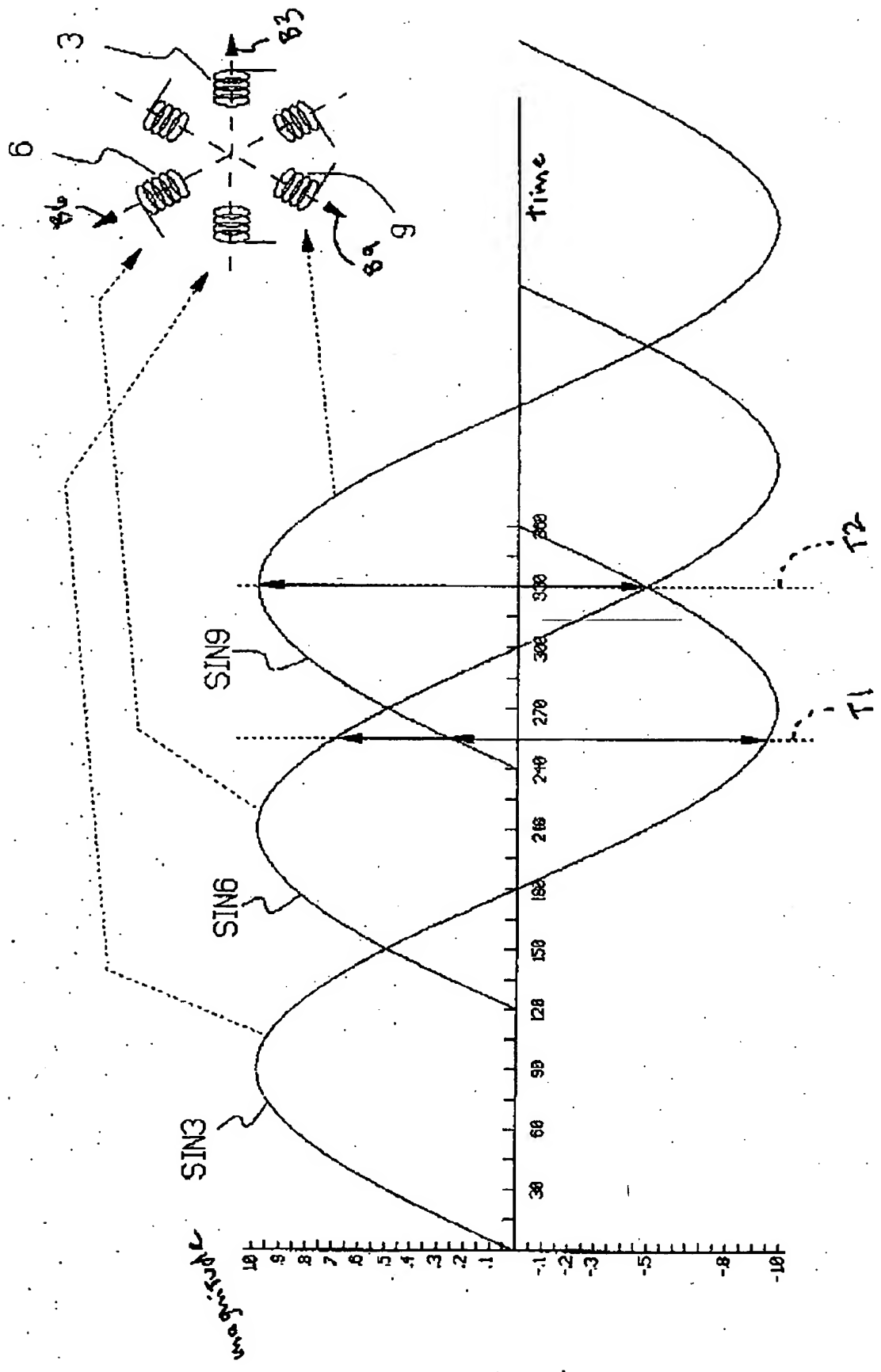


FIG 3 PRIOR ART

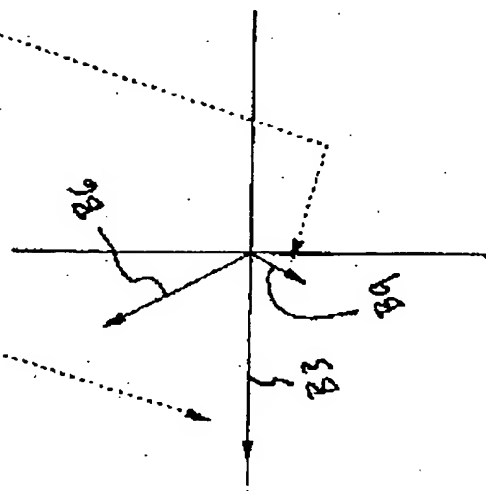
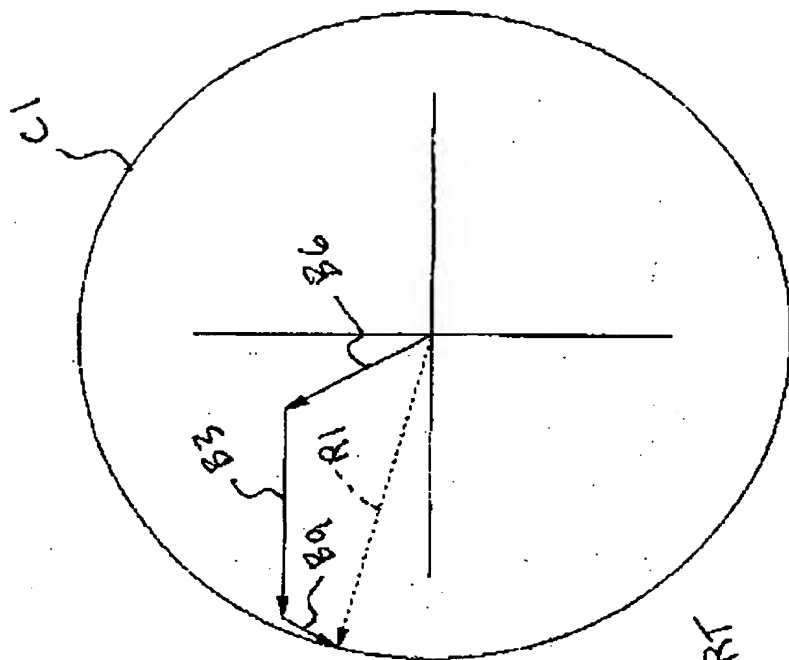
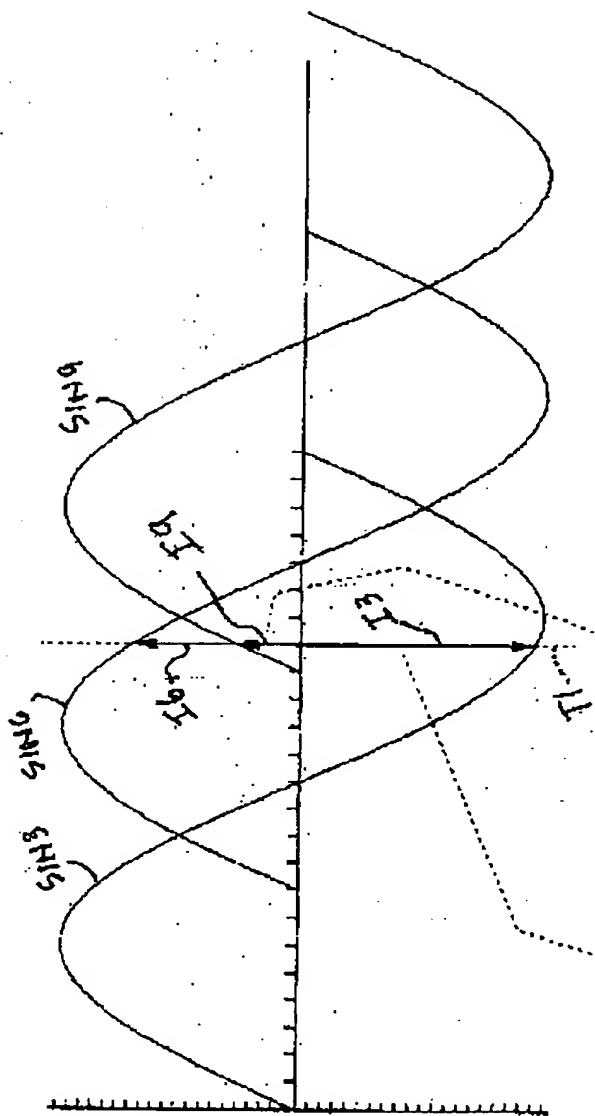


FIG 4 PRIOR ART

CC
C

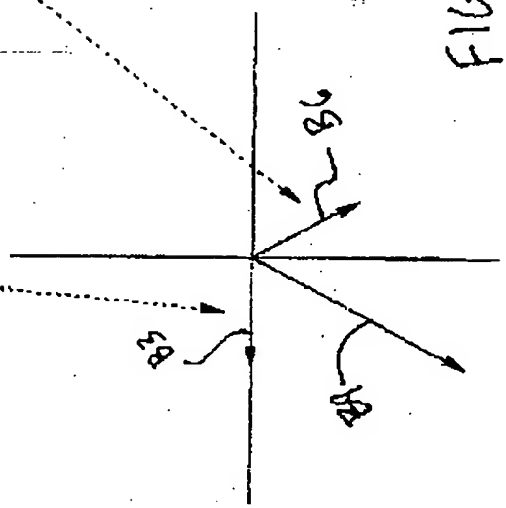
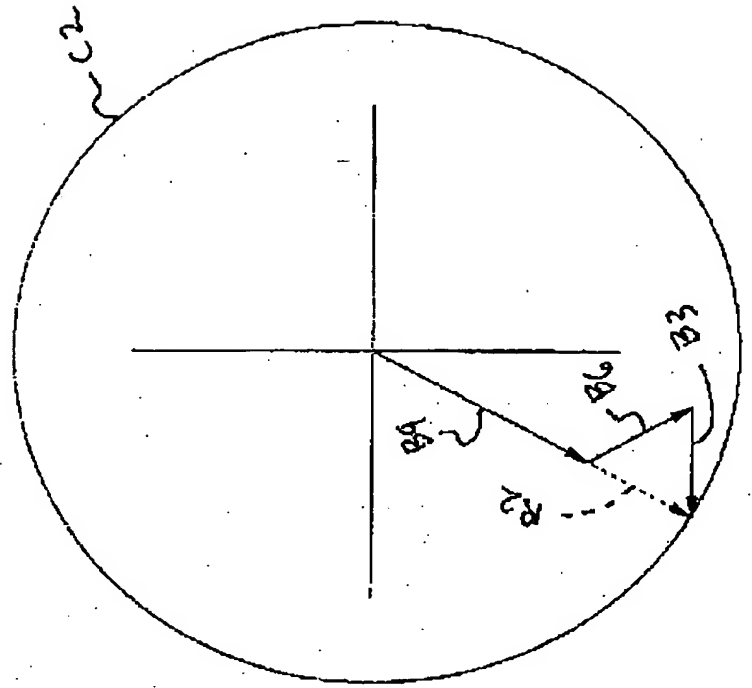
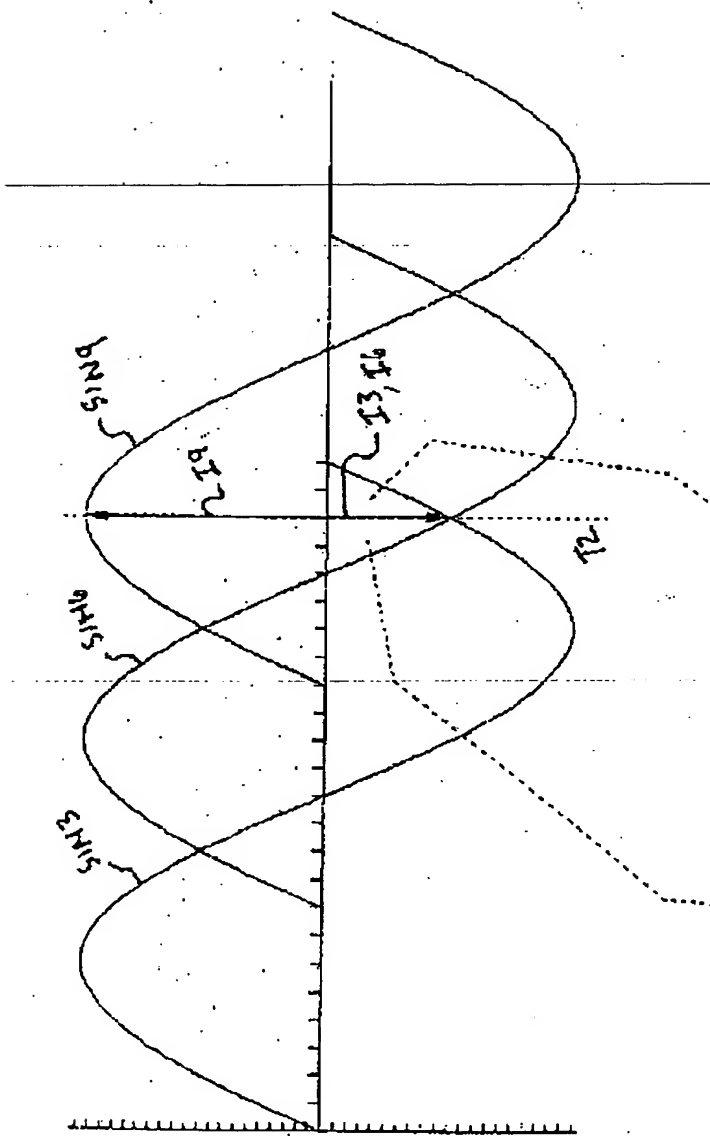


FIG 5
PRIOR ART

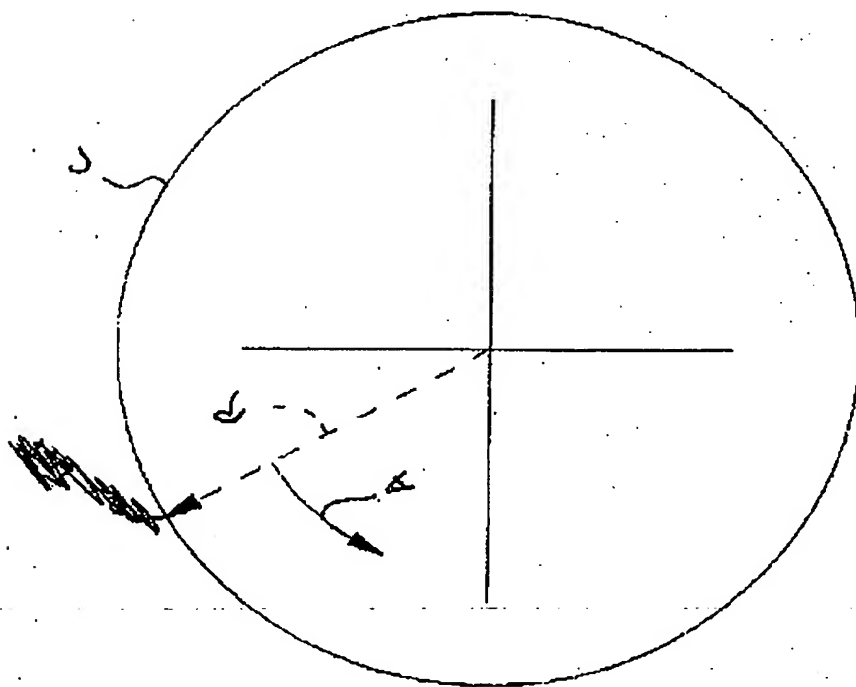


FIG 6
PRIOR ART

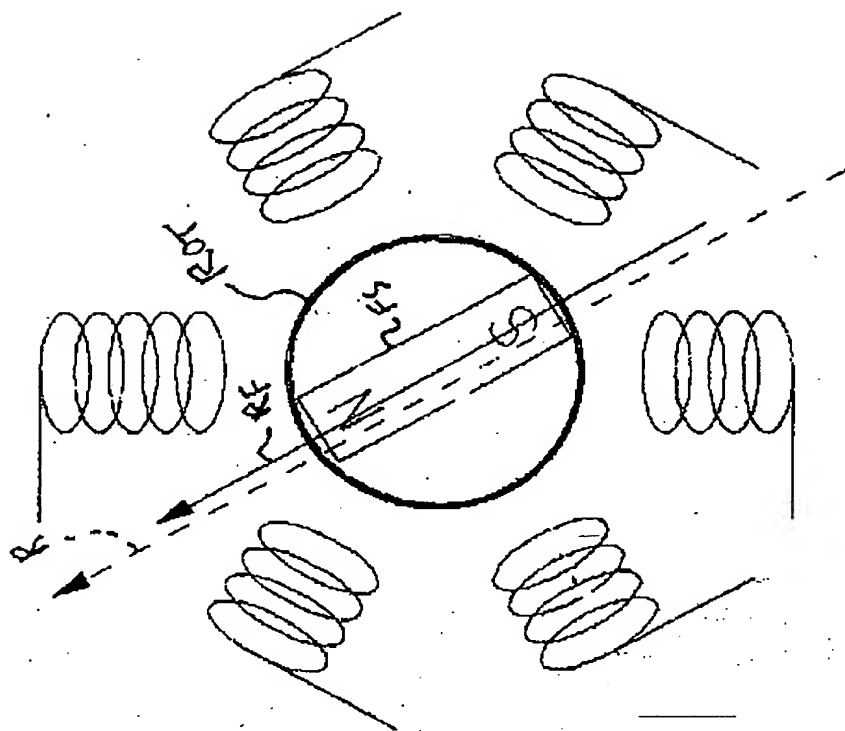
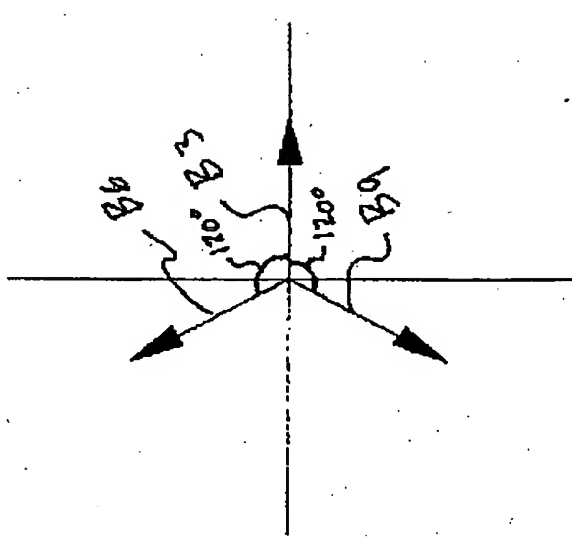
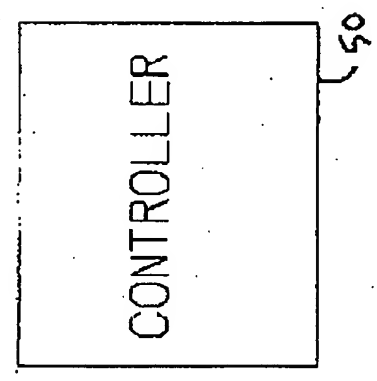
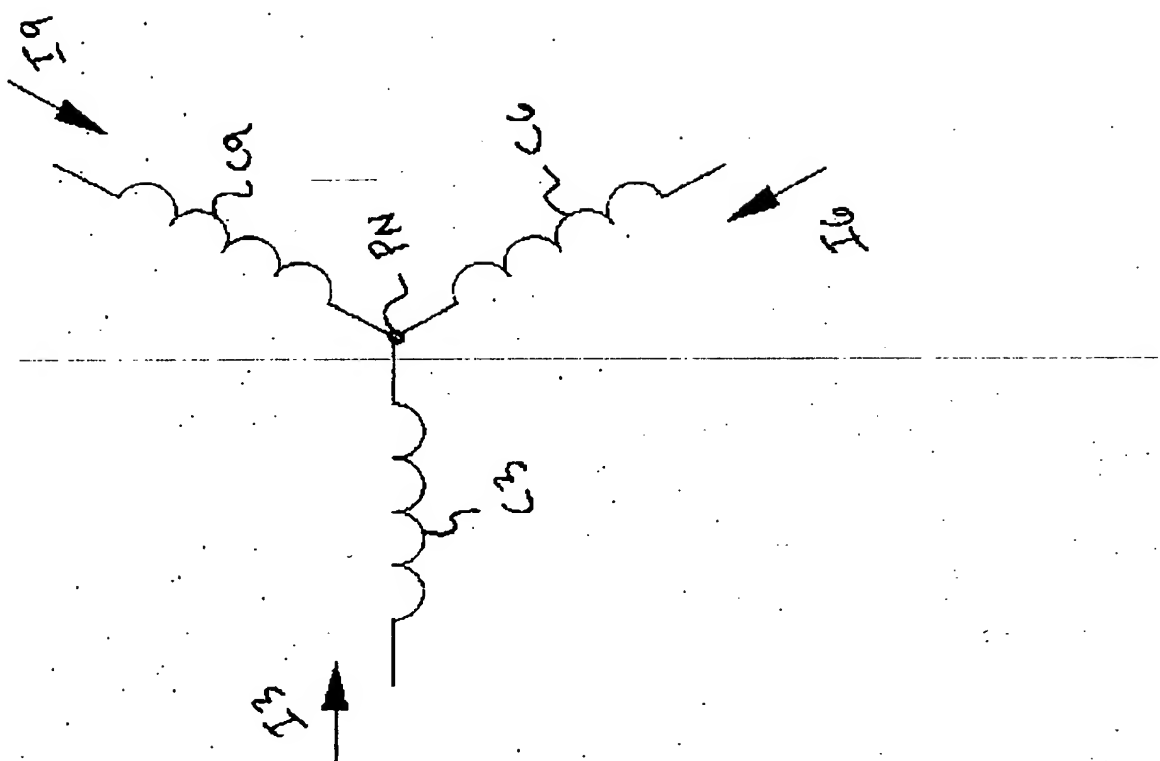
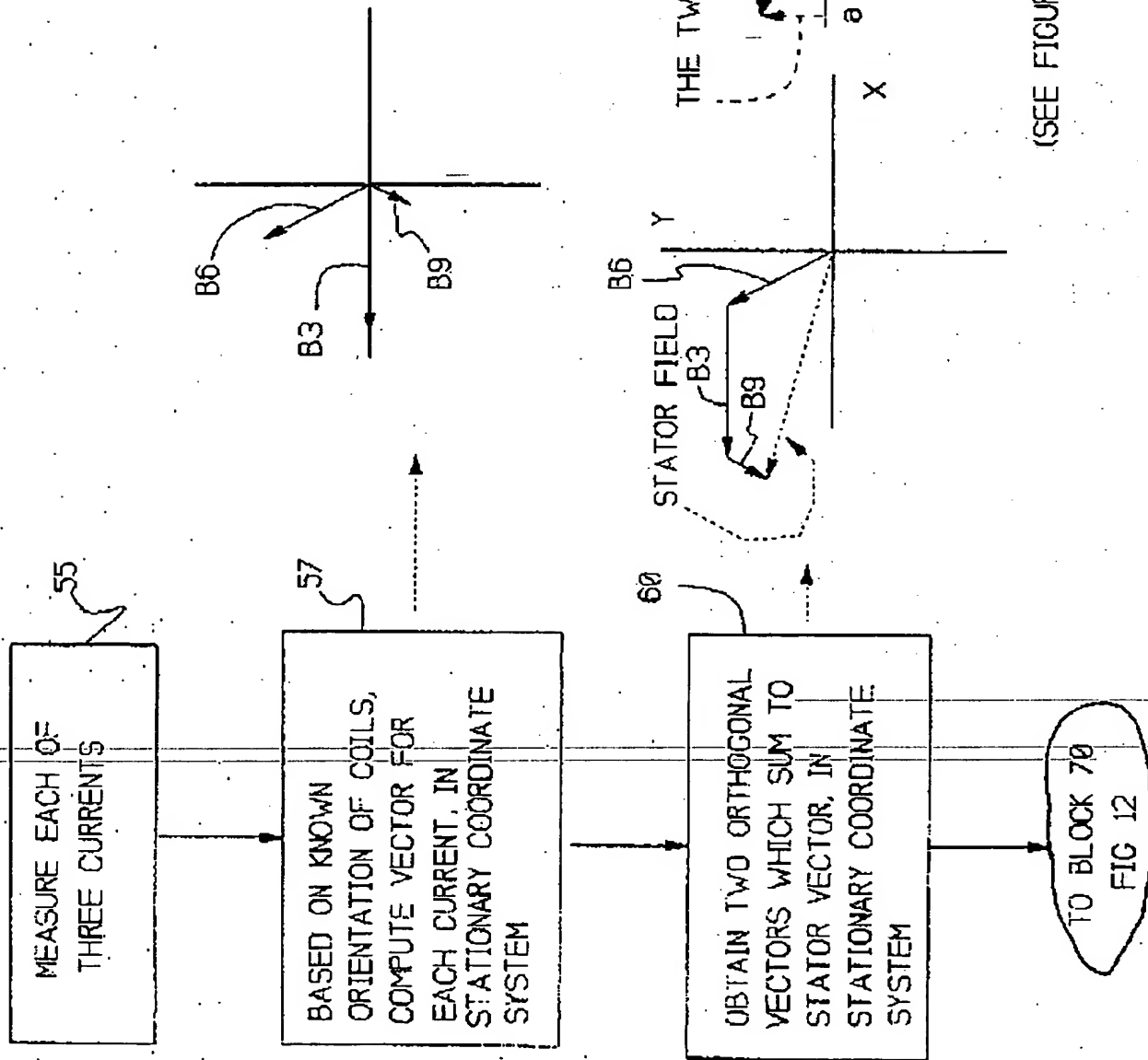


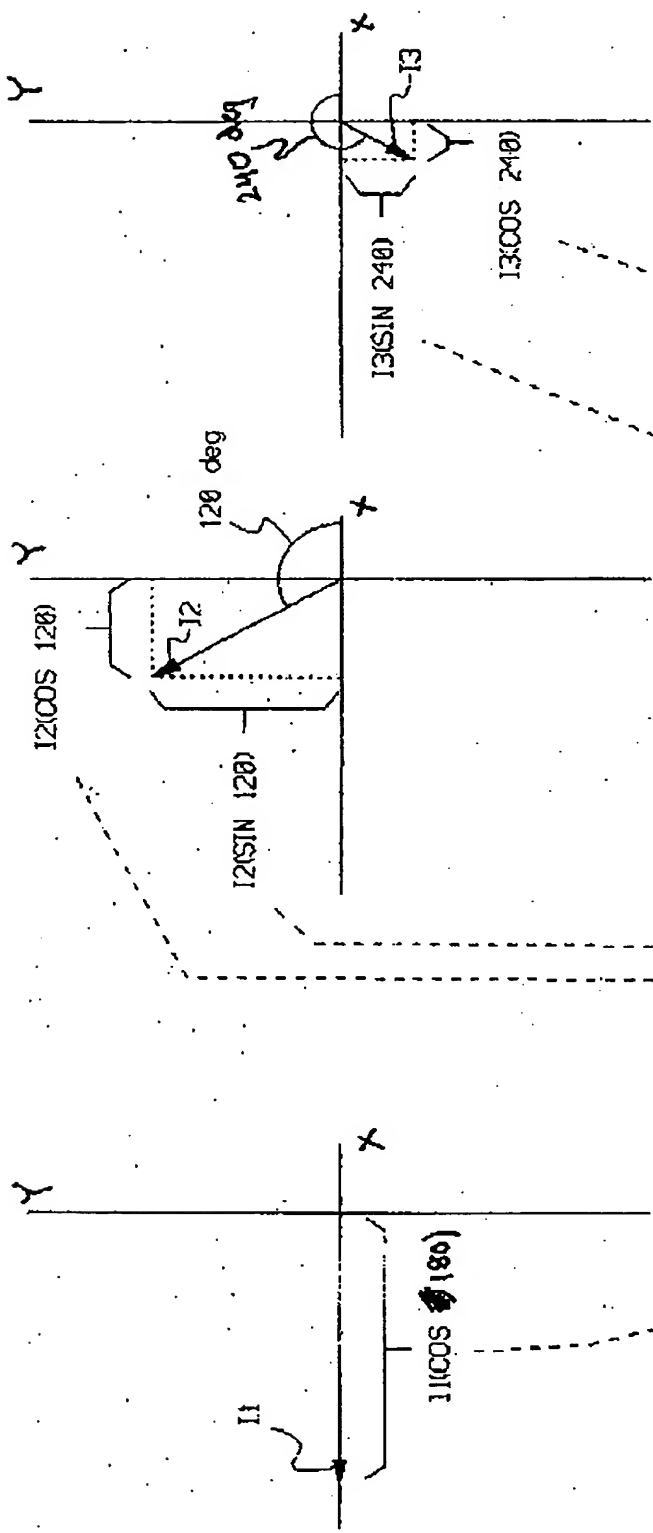
FIG 7
PRIOR ART



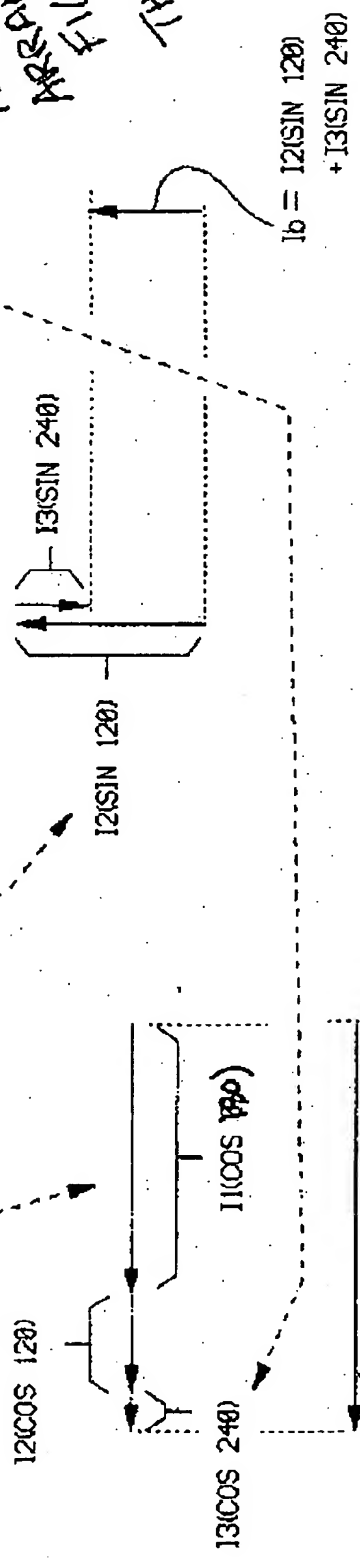
PRIOR
ART
FIG 8

FIG 9
PRIOR ART





ARTIST: DO
PLEASE REF-
TWO
MORSE
FIGURE
THANKS

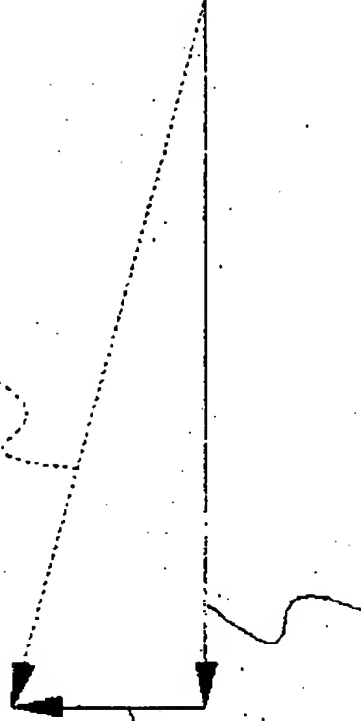


$$I_6 = I_1 \cos 0^\circ + I_2 \cos 120^\circ + I_3 \cos 240^\circ$$

FIG 10
PRIOR ART

$$I_b = I_2(\sin 120^\circ) + I_3(\sin 240^\circ)$$

STATOR FIELD



$$I_a = I_1(\cos 0^\circ) + I_2(\cos 120^\circ) + I_3(\cos 240^\circ)$$

~~BR 74~~

FIG 11

PRIOR

ART

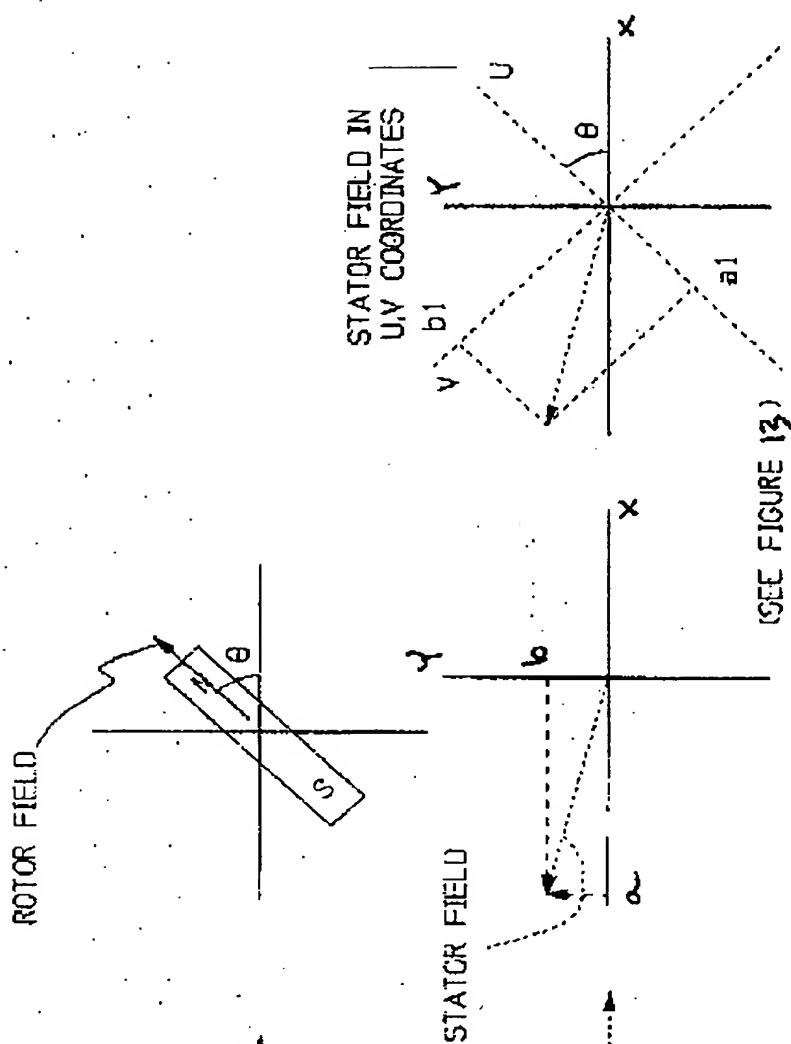
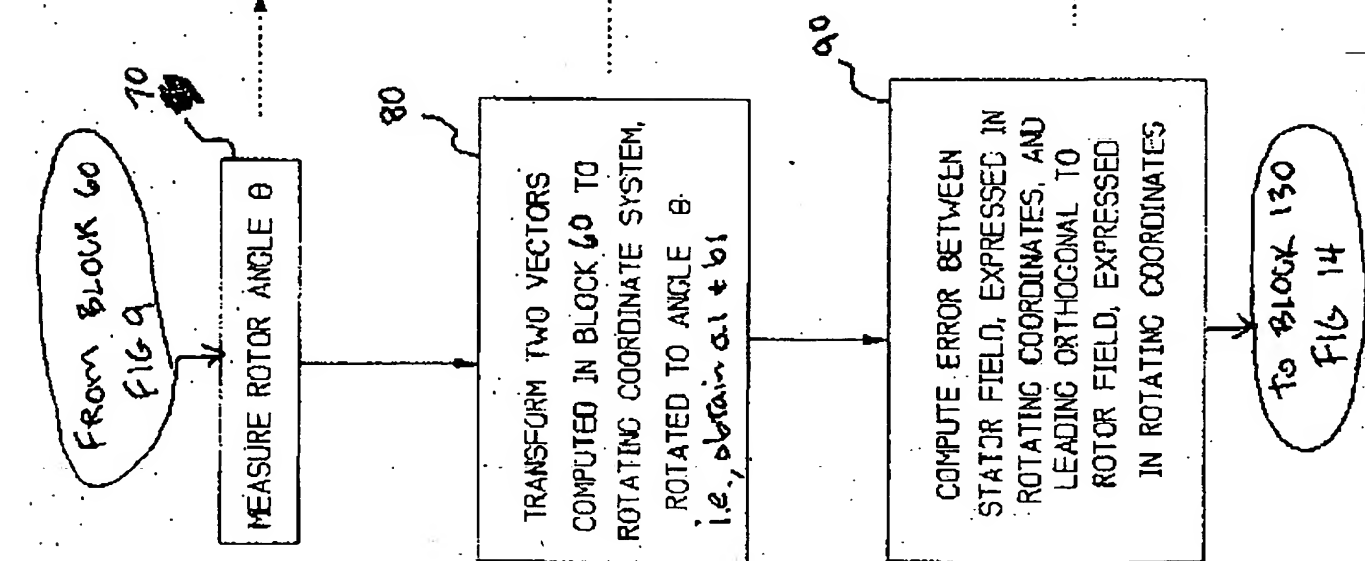
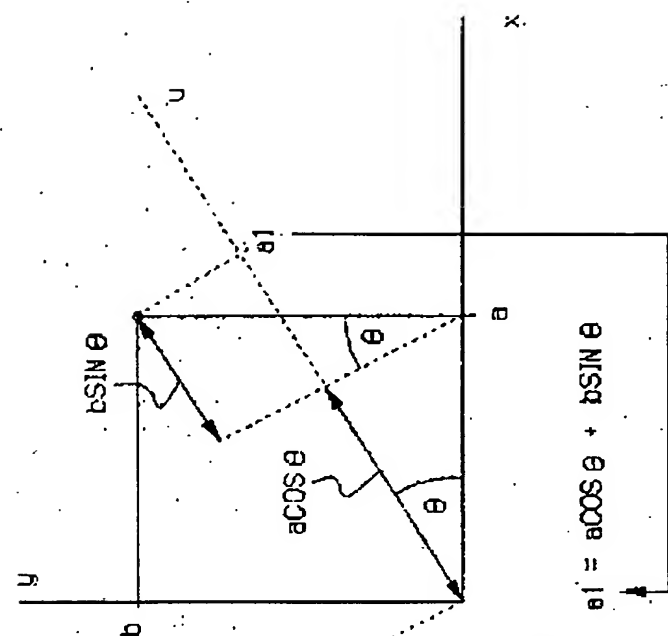


FIG 12
PRIOR ART

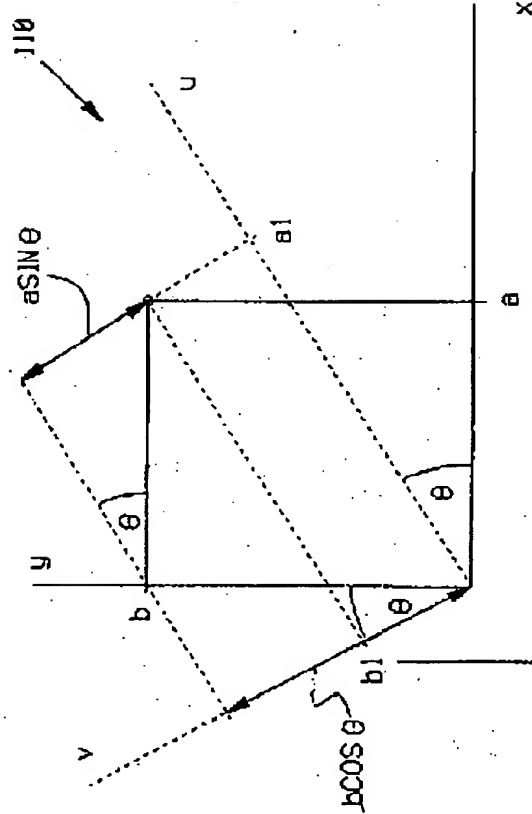
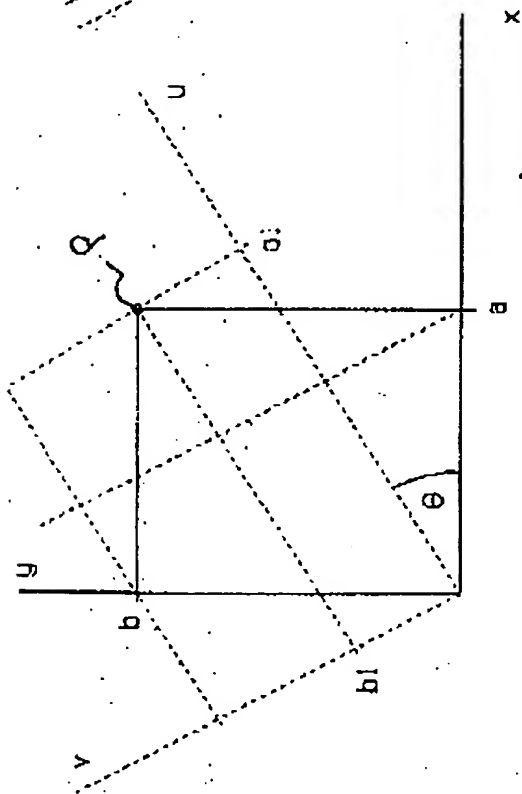




$$a_1 = a \cos \theta + b \sin \theta$$

$$a_1 = a \cos \theta + b \sin \theta$$

$$b_1 = -a \sin \theta + b \cos \theta$$



$$b_1 = -a \sin \theta + b \cos \theta$$

FIG 13
PRIOR ART

FROM BLOCK 90
FIG 12

130

COMPUTE NEEDED
STATOR FIELD
IN ROTATING
COORDINATE
SYSTEM

135

TRANSFORM NEEDED STATOR
FIELD TO STATIONARY
COORDINATE SYSTEM

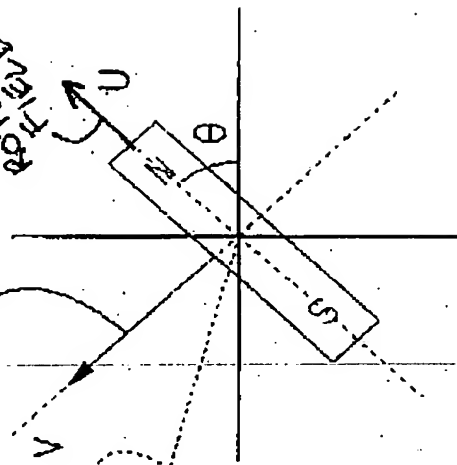
140

DETERMINE REQUIRED
COMBINATION OF 3 COIL
VOLTAGES

NEEDED FIELD

EXEMPLARY
STATOR FIELD

ROTORS



NEEDED FIELD

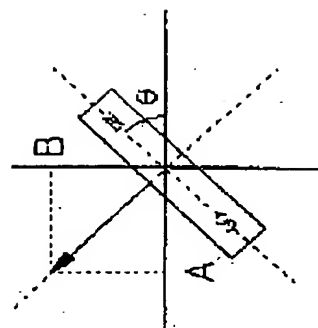
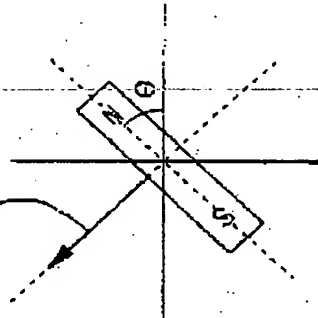


FIG 14
PRIOR ART

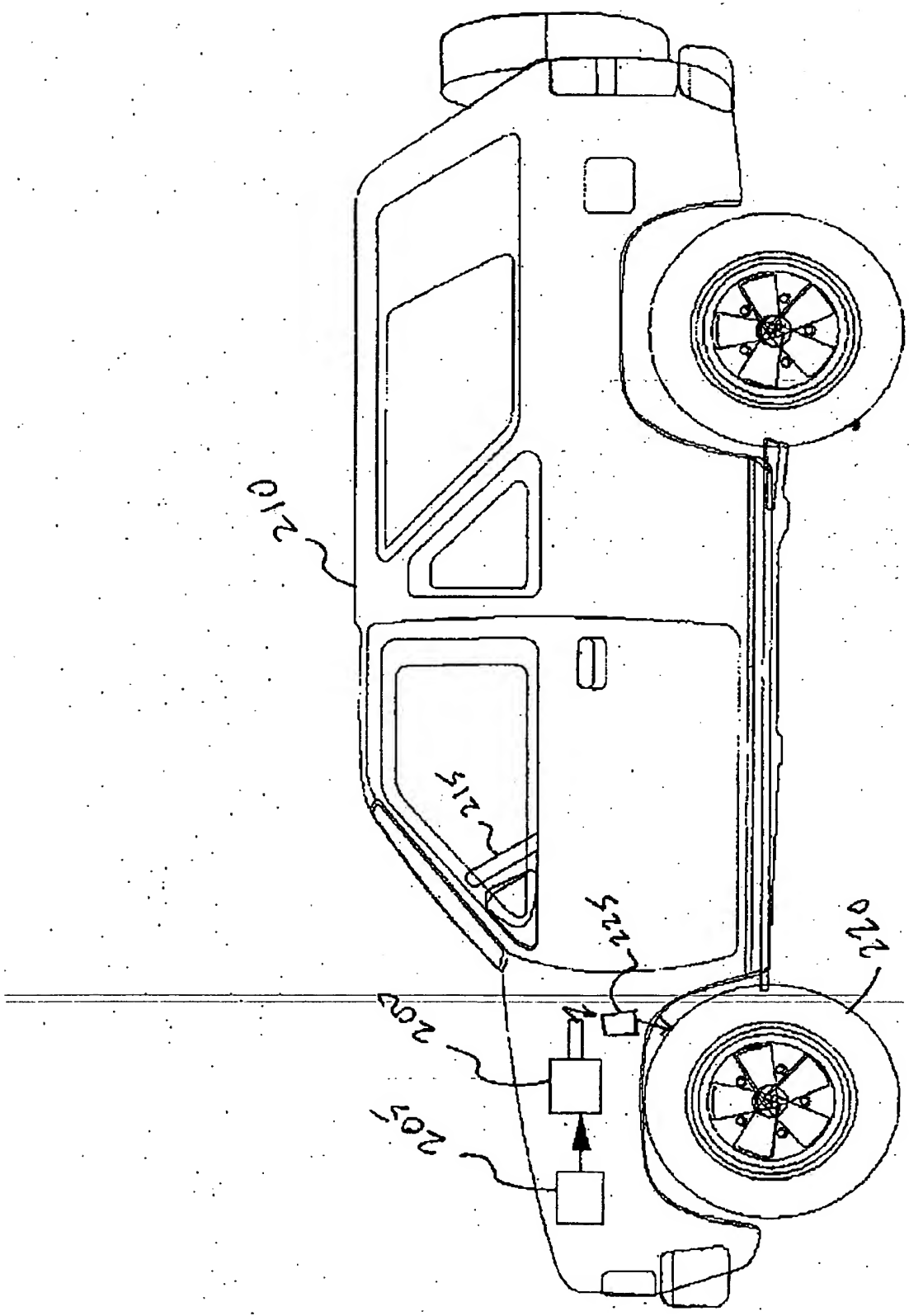


FIG 15

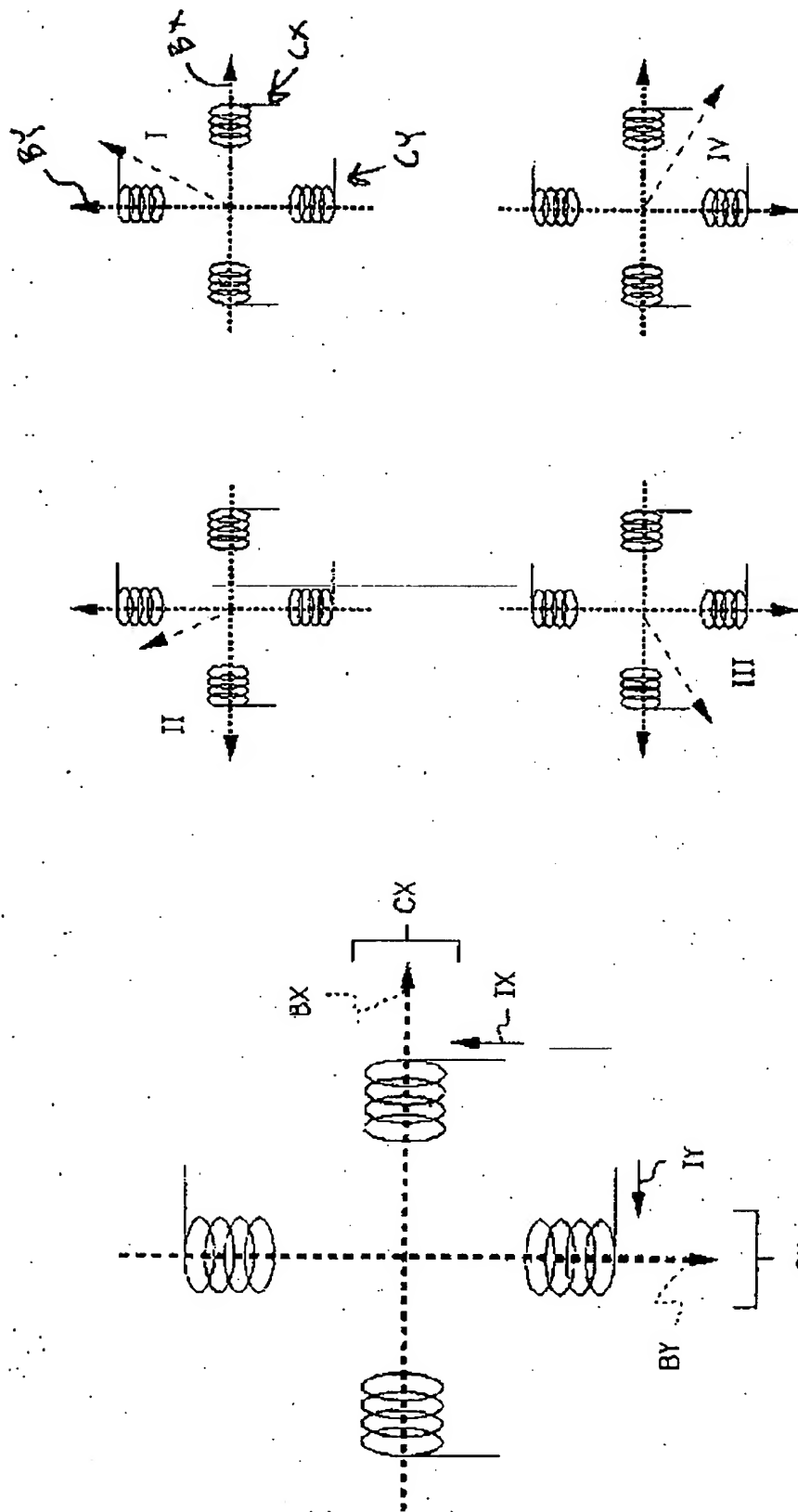
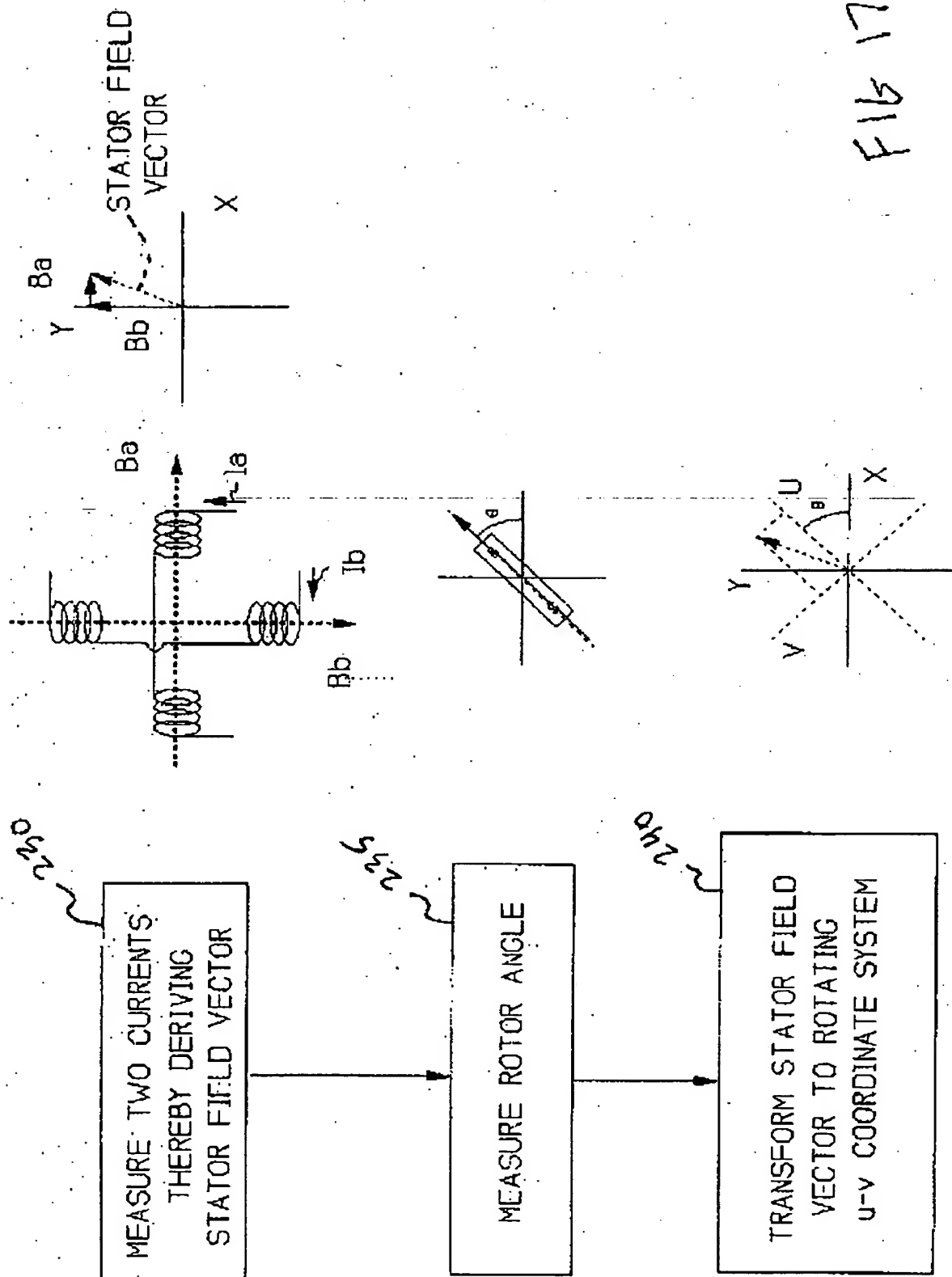


FIG 21

FIG 16



245
COMPUTE ERROR BETWEEN
b1 AND q
IN ROTATING COORDINATES

250
COMPUTE NEEDED STATOR
FIELD ANGLE IN ROTATING
U-V COORDINATES

260
TRANSFORM NEEDED STATOR
FIELD TO x-y COORDINATES

270
COMPUTE CURRENT NEEDED IN
TWO COILS

280
GENERATE CURRENT, CONSISTENT
WITH CONTROL STRATEGY

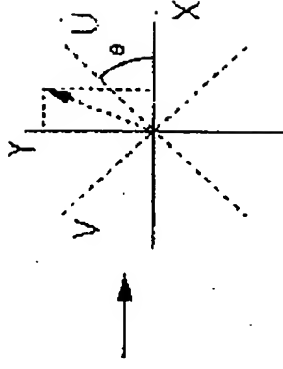
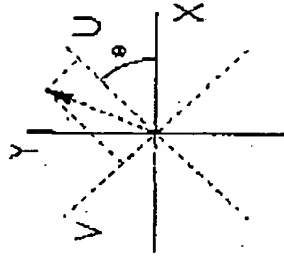
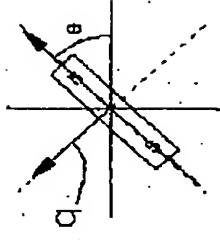
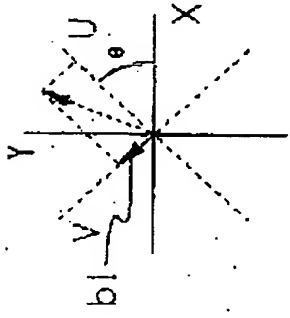
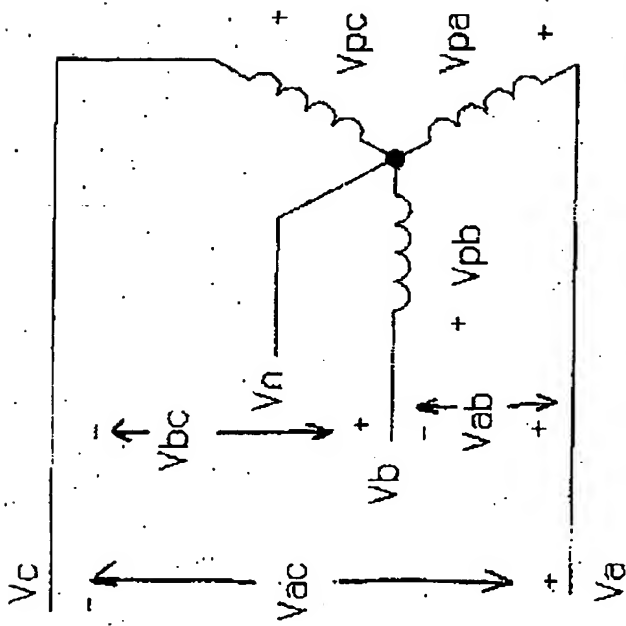


FIG 18



$$|V_L| = |V_{ab}| = |V_{bc}| = |V_{ca}| = \sqrt{3} |V_p|$$

$$\text{TOTAL POWER} = \sqrt{3} V_{LINE} I_P$$

PRIOR ART

FIG 20

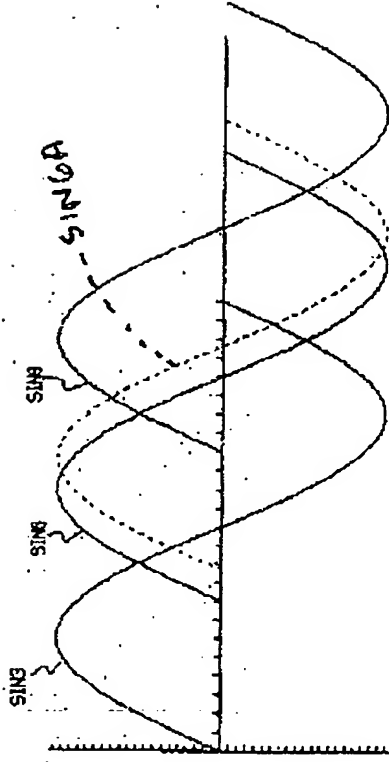


FIG 3

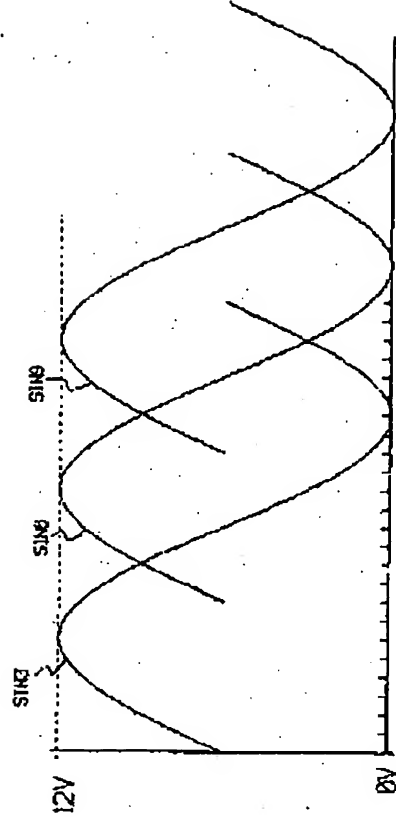
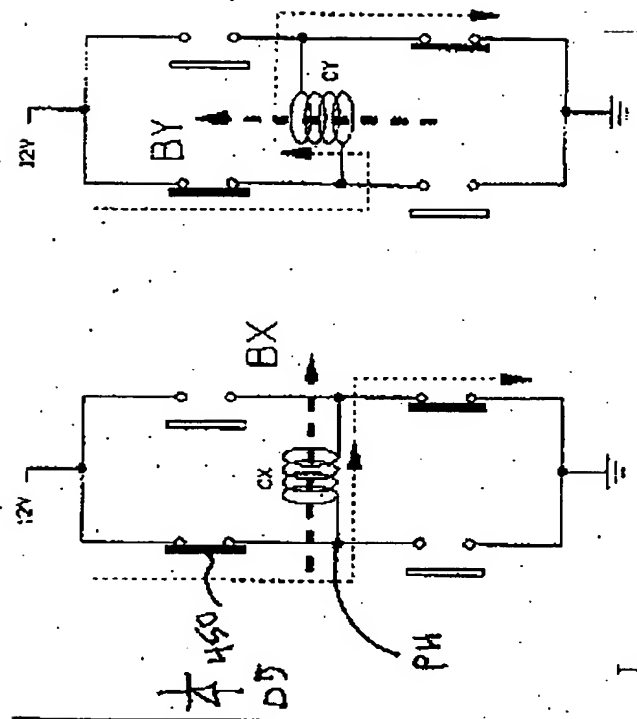
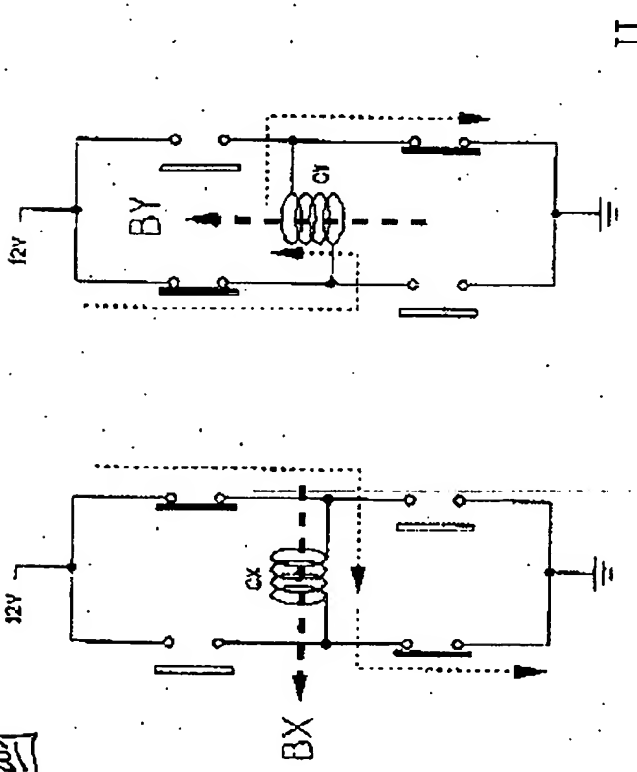


FIG 19 PRIOR ART

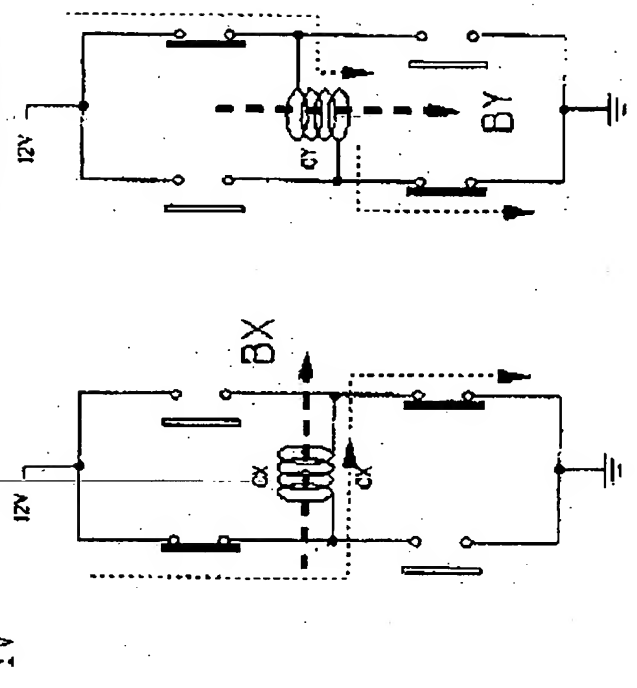
22
FIG 22



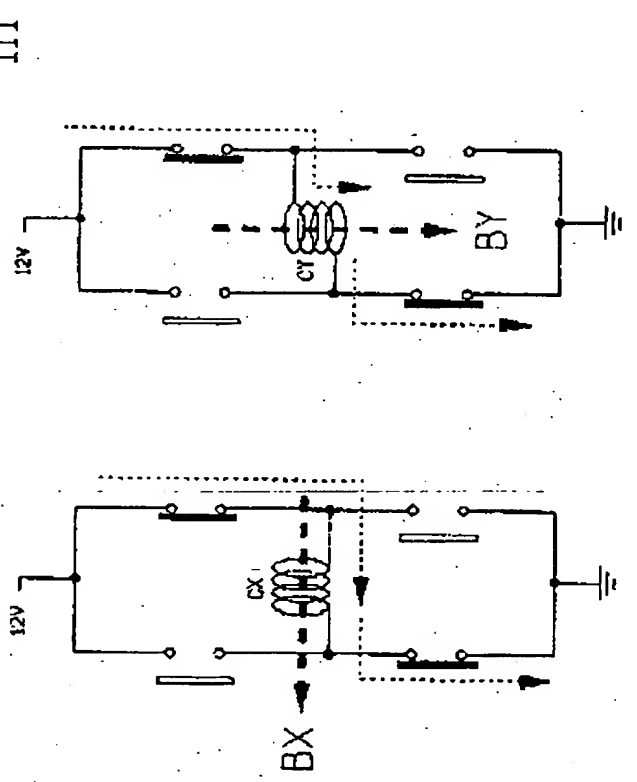
I



II



IV



III

205

FIG 23

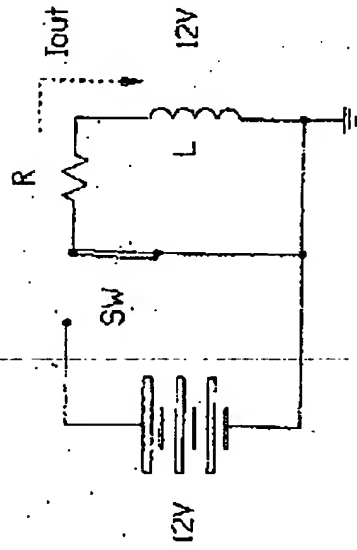


FIG 24

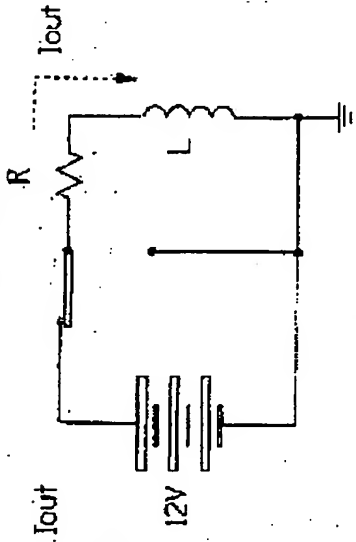
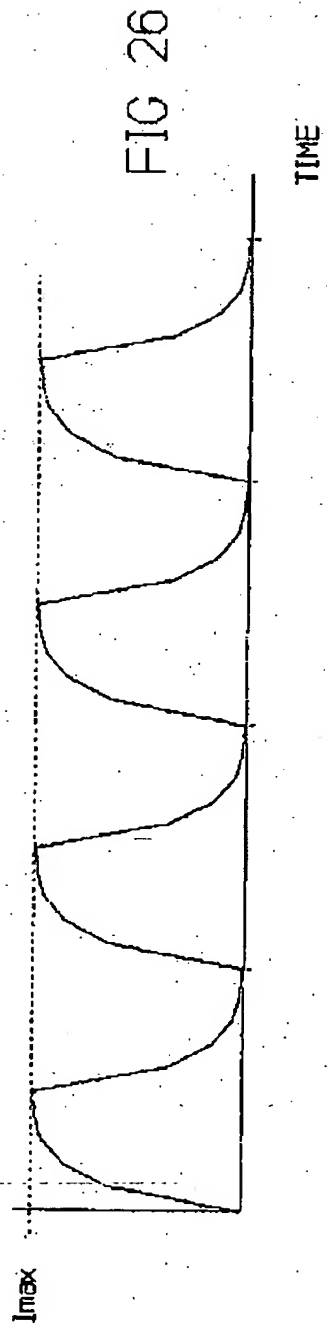
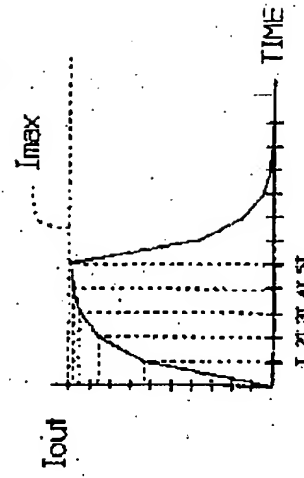
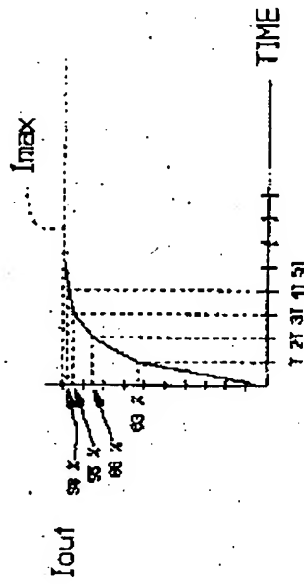
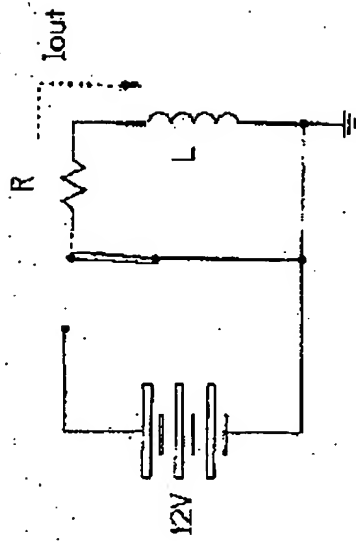
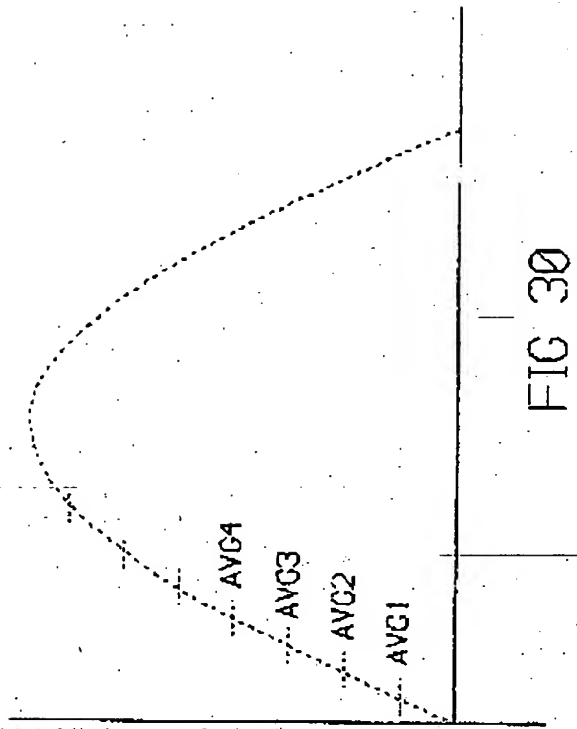
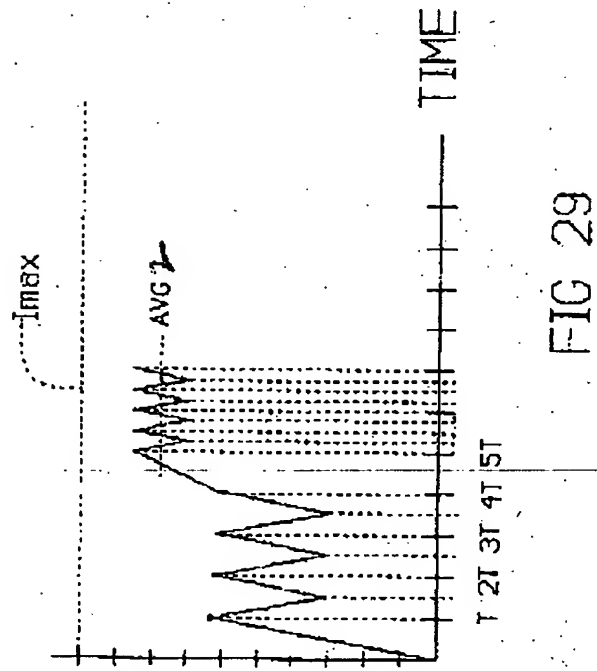
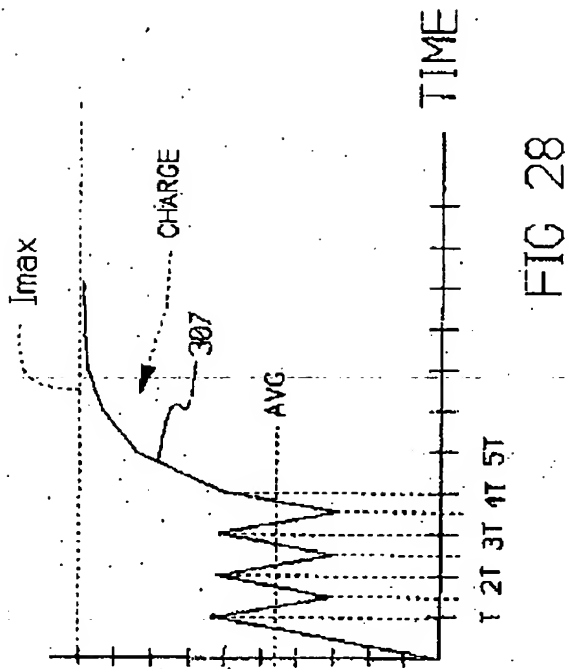
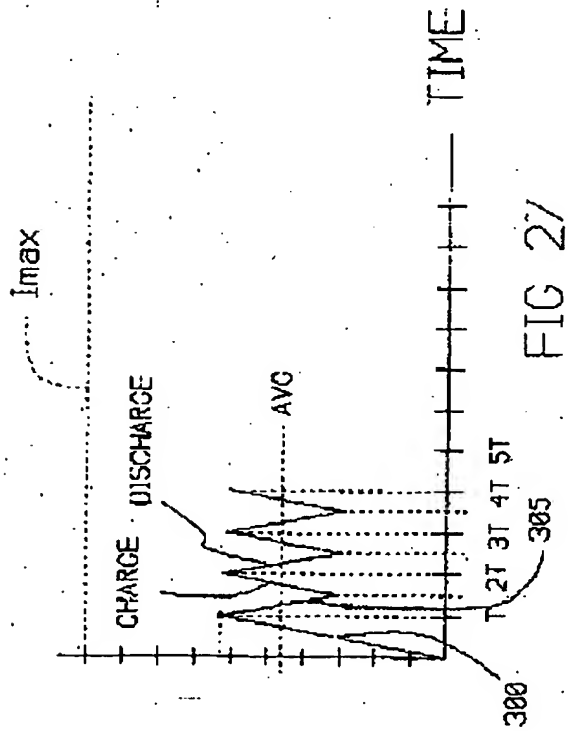
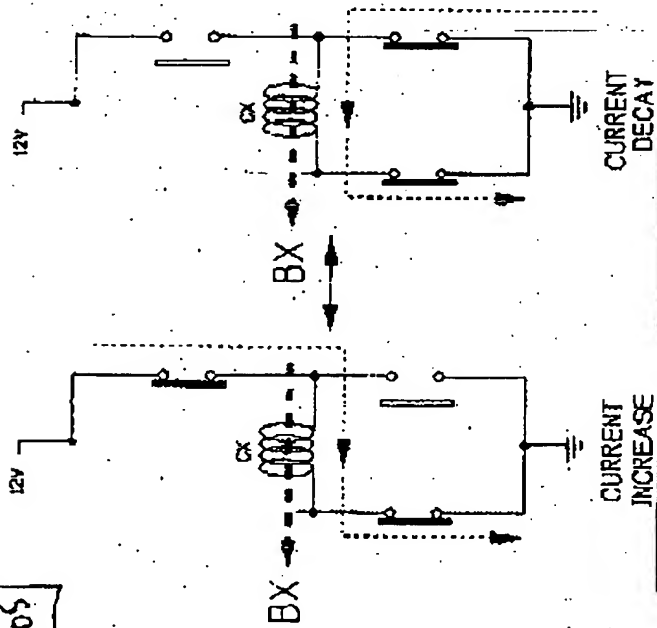


FIG 25

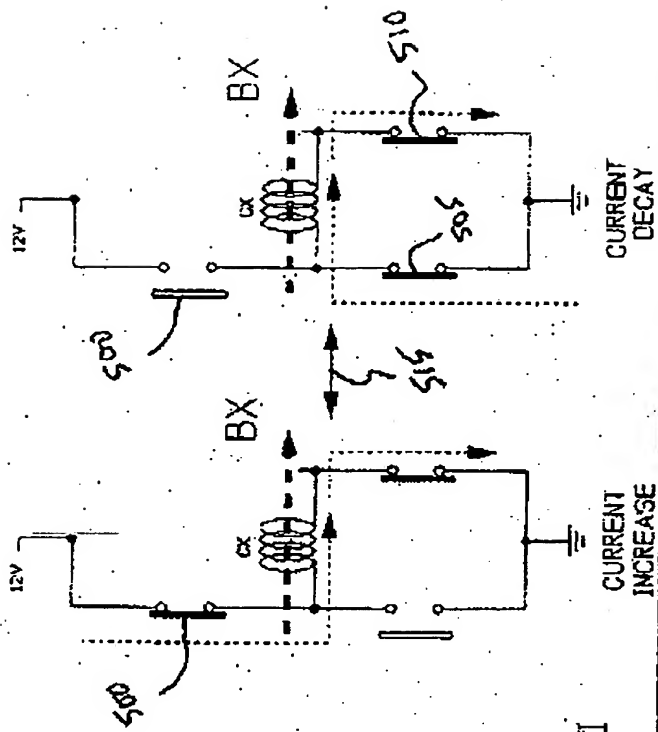




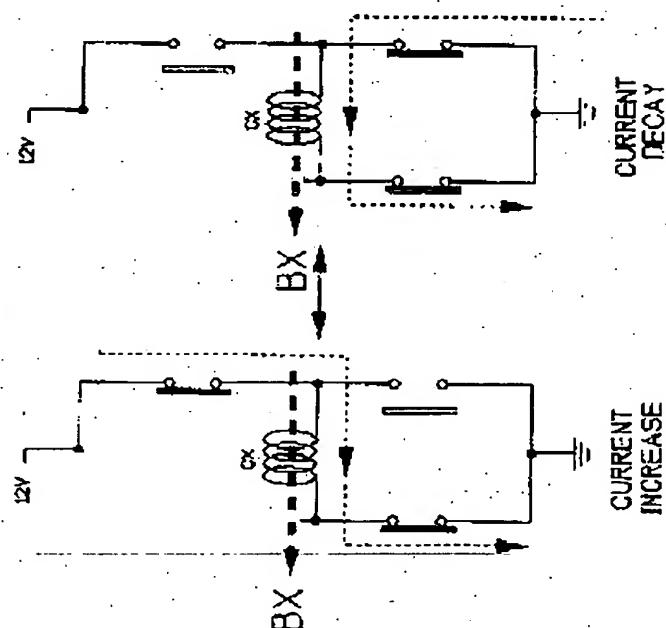
205



II



III



IV

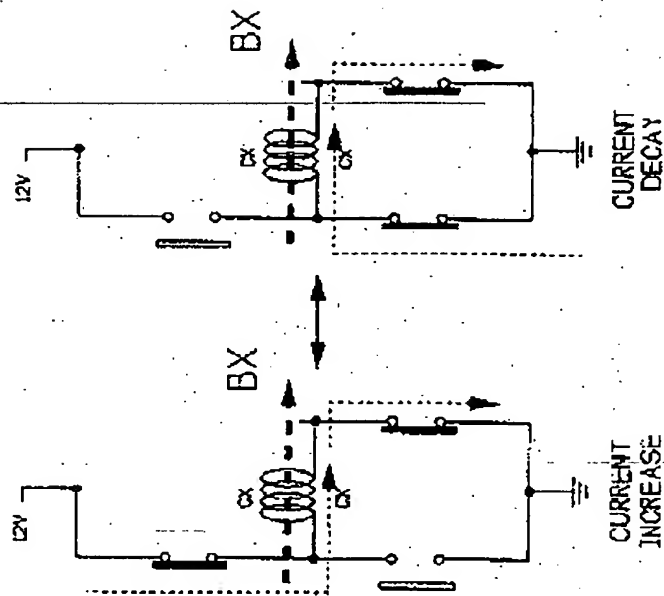


FIG 31

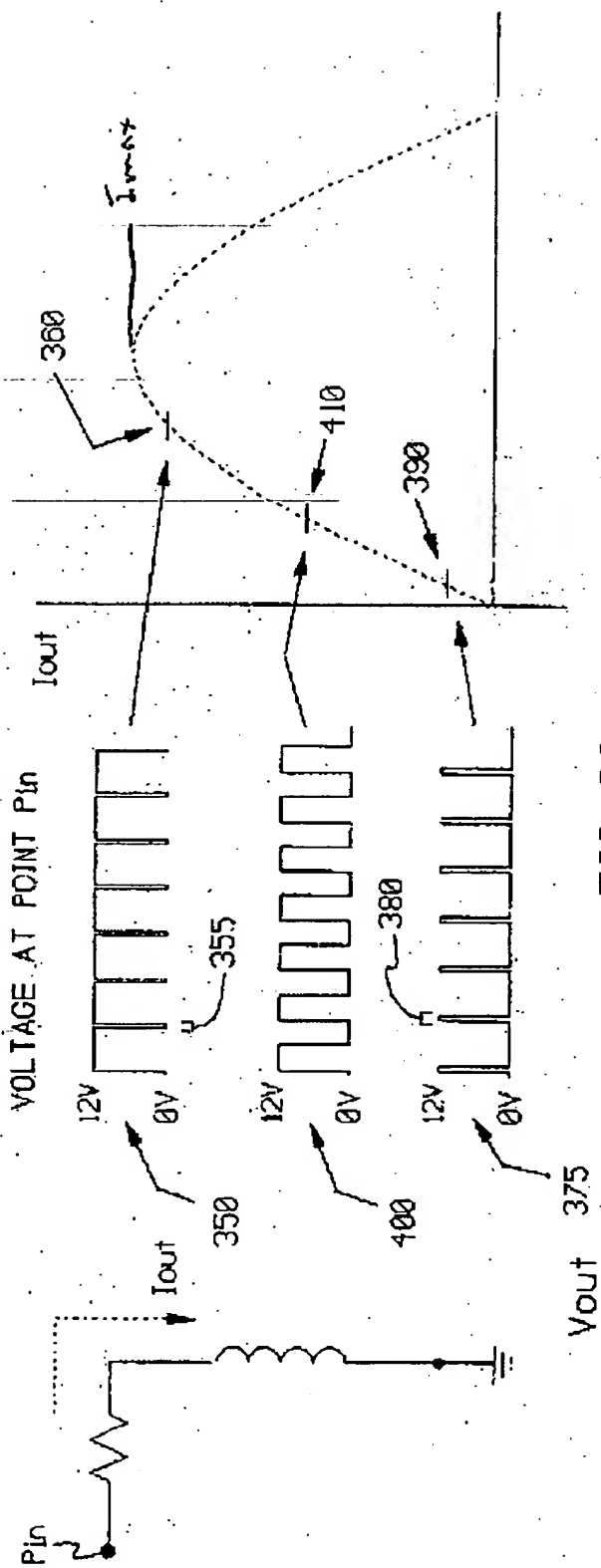


FIG 32

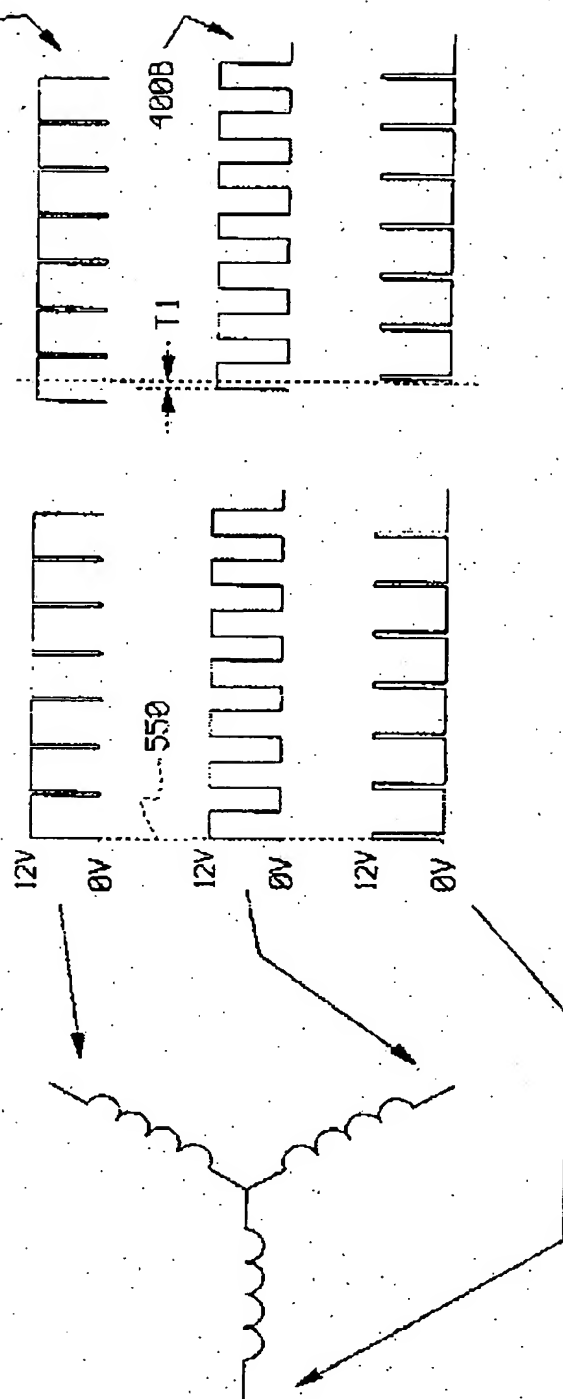


FIG 33

Motor Type	Phases	Commutation	Control
Brush DC Motor	3 slots 4 slots ... n slots	Mechanical	Open Loop Voltage Current Field Control
Permanent Magnet			
Series Wound Field			
Shunt Wound Field			
Compound Wound Field			
Switched Reluctance Motor	1 2 3 4 n	Current regulated Voltage regulated	Open Loop Voltage Current Phase Angle
Induction Motor	1 2 3 n	Sinusoidal space vector Triangle - sine	Open Loop Constant V/Hz FOC
Piezoelectric motor			
BRUSHLESS DC	2	SINE	FOC

INVENTION

FIG 35